

$$\begin{aligned}
& \mathbb{E}_{\{\} \rightarrow \{\mathbf{i}\}} \left[-\hbar \mathbf{a}_i \mathbf{b}_i, -\frac{\hbar \mathbf{x}_i \mathbf{y}_i}{B_i}, \right. \\
& \mathbf{1} + \left(\frac{\hbar^2 \mathbf{x}_i \mathbf{y}_i}{B_i} - \frac{\hbar^2 \mathbf{a}_i \mathbf{x}_i \mathbf{y}_i}{B_i} - \frac{3 \hbar^3 \mathbf{x}_i^2 \mathbf{y}_i^2}{4 B_i^2} \right) \epsilon + \left(-\frac{\hbar^3 \mathbf{x}_i \mathbf{y}_i}{2 B_i} + \frac{\hbar^3 \mathbf{a}_i \mathbf{x}_i \mathbf{y}_i}{B_i} - \frac{\hbar^3 \mathbf{a}_i^2 \mathbf{x}_i \mathbf{y}_i}{2 B_i} + \frac{5 \hbar^4 \mathbf{x}_i^2 \mathbf{y}_i^2}{2 B_i^2} \right. \\
& \left. \left. \frac{5 \hbar^4 \mathbf{a}_i \mathbf{x}_i^2 \mathbf{y}_i^2}{2 B_i^2} + \frac{\hbar^4 \mathbf{a}_i^2 \mathbf{x}_i^2 \mathbf{y}_i^2}{2 B_i^2} - \frac{67 \hbar^5 \mathbf{x}_i^3 \mathbf{y}_i^3}{36 B_i^3} + \frac{3 \hbar^5 \mathbf{a}_i \mathbf{x}_i^3 \mathbf{y}_i^3}{4 B_i^3} + \frac{9 \hbar^6 \mathbf{x}_i^4 \mathbf{y}_i^4}{32 B_i^4} \right) \epsilon^2 + \mathbf{0} [\epsilon]^3 \right]
\end{aligned}$$